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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/600,420

06/19/2003

Jiyang Yan

DP-308706

7012

22851

7590

05/02/2006

DELPHI TECHNOLOGIES, INC.

M/C 480-410-202

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TROY, MI 48007

EXAMINER

HAILEY, PATRICIA L

ART UNIT

PAPER NUMBER

1755

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/600,420

Applicant(s)

YAN, JIYANG

Examiner

Patricia L. Hailey

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 3-8, and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 13-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

Applicants' remarks and amendments, filed on January 30, 2006, have been carefully considered. Claims 2, 9-12, and 17-26 have been canceled; no new claims have been added.

Claims 1, 3-8, and 13-16 remain pending in this application.

### *New Grounds of Rejection*

1. Applicant's arguments with respect to the rejection of claims 1-18 in view of Canadian Patent No. 2,299,602 in the previous Office Action have been considered but are moot in view of the new ground(s) of rejection.

The New Grounds of Rejection are being made in view of Applicants' amendments, and in view of the newly discovered reference to Voss et al. (U. S. Patent Application Publication No. 2003/0124037).

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. *Claims 1, 3-8, and 13-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

Claim 1 lacks antecedent basis for the phrase "the catalytic element" in line 20. While claim 1 was previously directed to a method for making a "catalytic element", the claim now is directed to a method for making a "diesel particulate filter".

Claims 3 and 4 are indefinite because claim 3 depends from claim 2, which has been canceled.

#### *Claim Rejections - 35 USC § 103*

5. *Claims 1, 3, 4, 6-8, 13, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voss et al. (U. S. Patent Application Publication No. 2003/0124037) in view of Canadian Patent No. 2,299,602 (hereinafter "the Canadian Patent").*

Voss et al. disclose an apparatus for treating diesel engine exhaust comprising a catalyzed filter in communication with a diesel engine (having an exhaust outlet), and a second catalyst in communication with the first catalyst. See paragraph [0020] of Voss et al., as well as paragraph [0049], which discloses various applications for the apparatus, including treatment of waste gas streams such as internal combustion engine exhaust, nitric acid plant tail gases, etc.

The first catalyst preferably comprises a first platinum group metal component (such as platinum, palladium, and rhodium, see paragraph [0031]), a first cerium

component, and preferably a first zirconium component. Where a second catalyst is used in combination with the first catalyst, as a separate catalytic element or as part of the soot filter (soot being carbonaceous particulates, see paragraph [0019]), a preferred second catalyst composition comprises a second cerium component and preferably a second platinum group metal component. See paragraphs [0024]-[0025] of Voss et al., which also disclose metal oxides such as silica, alumina, titania, zirconia, silica-alumina, and ceria-zirconia as exemplary second catalyst composition components.

The catalyzed filter can comprise any suitable filter substrate, such as a wall-flow honeycomb substrate. See paragraph [0053] of Voss et al., as well as Figures 2 and 3.

The first catalyst components are preferably present in amounts ranging from about 0.1 to 200 g/ft<sup>3</sup> (0.0035 to 7.062 g/L). See paragraph [0058] of Voss et al.

The wall-flow substrate has an inlet end and an outlet end, and additionally comprises a plurality of channels, such that each channel is blocked at one end, of the substrate, with alternate channels blocked at opposite end-faces. The wall-flow substrate exhibits a wall thickness of between 0.002 and 0.1 inches (50.8 to 2540 micrometers), and preferably between 0.007 and 0.03 inches (200 to 750 micrometers). Further, the wall-flow article may have the catalytic elements present thereon on the inlet side of the element wall alone, the outlet side alone, or on both the inlet and outlet sides. See paragraphs [0080] to [0083] of Voss et al.

The above disclosures are considered to read upon Applicants' claims regarding the provision of a wall-flow substrate and the catalyst applied thereto (e.g., claims 1, 3-

5, 14-16). Further, the claim limitations regarding (1) the pore size ratios between the catalyst composition and the substrate, (2) the increase in balance point temperature, (3) penetration of the inlet wall of the substrate by the catalyst composition, and (4) the catalyst composition content at the outlet wall of the substrate, are also considered encompassed by Voss et al., in view of the teachings therein, and in view of Applicant's claim recitations "less than or equal to".

Although Voss et al. disclose a "general method of preparation of the catalyst composition" wherein, for example, an aqueous slurry of ceria particles and other components such as metal oxide particles (optionally impregnated with the platinum or palladium metal component) is applied to the carrier, dried and calcined to form a catalytic material coating thereon (paragraphs [0071]-[0073]), the reference does not teach or suggest the method steps recited in claim 1.

The Canadian Patent discloses a method for producing a catalyst material by providing a powdered aluminum oxide stabilized with basic oxides as support material, impregnating the support material with a solution of at least one precursor compound of alkaline earth and rare earth metals ("first slurry"), drying the impregnated support material and calcining it at temperatures below 800°C, repeating the aforementioned impregnation and drying steps until the desired loading with basic oxides is achieved; additional impregnation of the obtained material with a solution of precursor compounds of catalytically active noble metals ("second slurry"), and finally drying and calcining. See page 6, lines 10-25 of the Canadian Patent.

The stabilized aluminum oxide is preferably aluminum oxide doped with 1 to 10 wt. % lanthanum oxide ("doped aluminum oxide", "lanthanum doped aluminum oxide"). See page 7, lines 3-23 of the Canadian Patent, as well as page 8, line 25 to page 9, line 19, which discloses that the aluminum oxide may be doped with additional basic oxides such as those of magnesium, calcium, strontium, barium, cerium, praseodymium, neodymium, samarium, europium, terbium, and ytterbium (page 9, lines 11-19; "promoter oxide precursor").

Examples of the catalytically active noble metals include platinum, palladium, rhodium, and iridium. See page 10, lines 3-11 of the Canadian Patent, which also discloses the concentrations thereof, with respect to the total weight of catalyst material.

Example 1 of the Canadian Patent depicts an embodiment of Patentees' catalyst material, wherein an aluminum oxide stabilized with lanthanum oxide ("support material 1", see page 13, lines 22-26) is mixed with cerium/zirconium mixed oxide, and impregnated with platinum and palladium, and the impregnated mixture is dried and calcined. Next, the powder is stirred with water to give an aqueous suspension, and milled to a particle size of 3 to 5  $\mu\text{m}$ . The solids in the dispersion were applied to a support structure (e.g., a cordierite honeycomb structure) using an immersion method, followed by aging for 4 hours at 1100°C in an atmosphere of nitrogen, water, and oxygen (considered to read upon the last two steps in Applicants' claim 1). See also page 16, lines 3-11 and page 17, lines 7-21 of the Canadian Patent.

The claim limitations regarding (1) the pore size ratios between the catalyst composition and the substrate, (2) the increase in balance point temperature, (3) penetration of the inlet wall of the substrate by the catalyst composition, and (4) the catalyst composition content at the outlet wall of the substrate, are also considered encompassed by the Canadian Patent, in view of the teachings therein, and in view of Applicant's claim recitations "less than or equal to".

The catalyst material prepared by the method of the Canadian Patent is "particularly suitable for...the treatment of exhaust gases from internal combustion engines." See page 1, lines 8-10 of the Canadian Patent.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Voss et al. by incorporating therein the method disclosed in the Canadian Patent, and thereby obtain Applicants' claimed invention, because the apparatus comprising the wall-flow substrate disclosed in Voss et al. is suitable for the treatment of waste gas streams such as internal combustion exhaust. See paragraph [0049] of Voss et al.

### *Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
7. Applicant's amendment (namely, the amendments to claim 1 incorporating limitations drawn to the provision of a wall-flow substrate) necessitated the new



ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

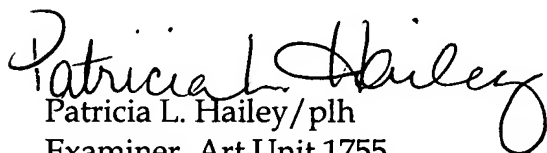
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

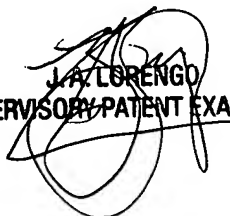
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Patricia L. Hailey/plh  
Examiner, Art Unit 1755  
May 1, 2006

  
J.A. LORENZO  
SUPERVISOR/PATENT EXAMINER